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THE MARINE RECORD.

DEVOTED TO COMMERCE, ENGINEERING AND SCIENCE.

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PROPOSED RAPID TRANSIT STEAMSHIP COMPANY.

Our readers will remember the mention made in the RECORD of the project for putting a large and well appointed steamship on Lake Erie, to ply between Toledo, Cleveland and Buffalo, to make close connection with railroad lines and for the accommodation of excursion parties in addition to the regular passenger business.

This week we present a faithful picture of one of the proposed boats, drawn by Captain Stoddard's son, which will give all a correct idea of the magnitude of the undertaking which Captain Stoddard has entered upon, and the boldness of the project will, without doubt, insure its success.

While passenger lines on short routes have not heretofore been paying investments on the lakes, there is no reason at this time why the steamers now under consideration should not command a patronage that would in a short time become a dividend paying project.

Although the history of navigation as regards passenger lines on the lakes is not very encouraging, it is possible that the efforts made were in advance of the times in which they failed.

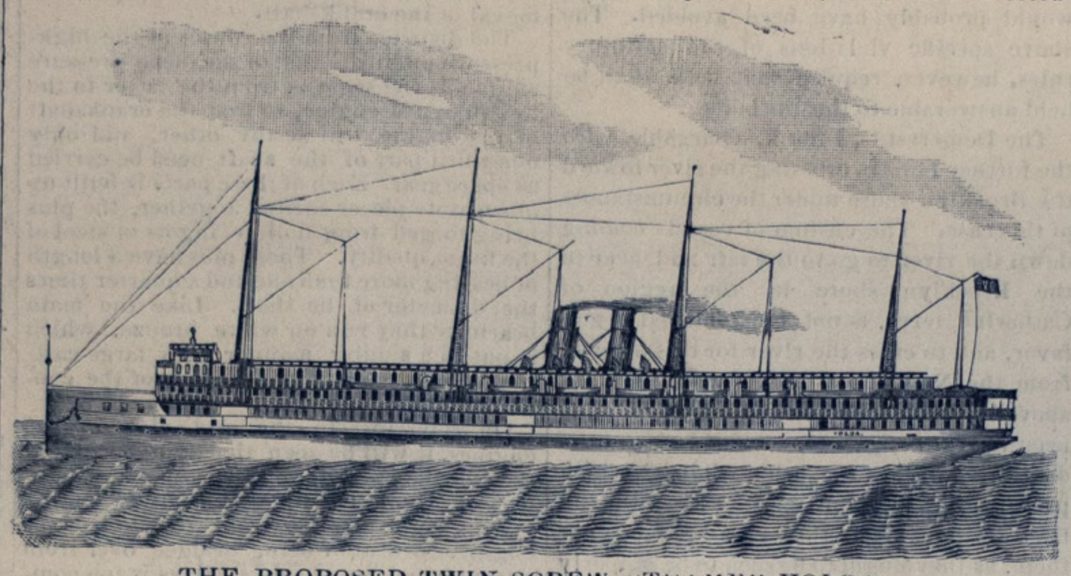
In 1854 three mammoth passenger steamers, the Western World, Plymouth Rock and Mississippi, were put on Lake Erie between Detroit and Buffalo as passenger boats, but they did not prove successful and after running until 1857 they were laid by at Detroit, and in the latter part of the season their machinery was taken out and shipped to New York city and the hulls towed to Buffalo. Other steamers, designed for passenger traffic, found the same fate, but we must remember that this was in the days when railroads were a novelty, the country sparsely settled and without a metropolis such as we have now of 250,000 to 300,000 inhabitants at either end of the route.

The plan of the projectors of the Rapid Transit line, although it is subject to change as occasion may require, is to build two twin screw steamers 370 feet keel, 400 feet over all, 40 feet beam with 8 feet guards, making 56 feet breadth, 21 feet depth of hold and to draw 13 feet in ballast trim. The boats will be provided with a water bottom three feet deep, and in addition ten water tight compartments by one bulkhead running fore and aft and five athwartship bulkheads. The lower hold will be ten feet in the clear and the upper hold eight feet. The latter will be fitted up as a gentleman's cabin, above which will be the promenade deck with two tiers of cabins. On the upper deck will be one tier of elegantly furnished state rooms opening on the gallery. The dining room will be on the main deck, forward of the smoke stack and will be 40 feet wide by 100 feet long, with a broad stair case leading to it from the main saloon, and as the head room will be extended the entire length of the dining room, encircled by upholstered railing, making a double gallery, it will add much to the effect.

Power will be supplied to the twin screws, which will be 13 feet in diameter and 22 feet lead, by two engines of 2 500 horse power, of the three cylinder compound type, and steam furnished by eight boilers. The machinery and boilers will be placed, one half, on each side of the fore and aft bulkhead so that in case of accident to one the other can work independently.

Captain Stoddard has secured as incorporators in the enterprise some of the best known and most substantial business men on the lakes, those at Toledo being C. F. Curtiss, of the lumber firm of Curtiss & Brennan; H. S. Walbridge, connected with the Toledo rolling mill enterprise and the Toledo National Bank; C. S. Reynolds, of the firm of Reynolds Brothers, grain commission merchants; W. H. Belman, of the firm of Crabbs, Belman & Co., grain commission merchants; M. D. Carrington, of the Ohio Central Coal & Barge Co. and grain commission merchants.

In Cleveland the names of William Chisholm, J. H. Wade, H. H. Brown, and Mayor G. W. Gardner and the name of another prominent business man, who is now out of the city, has been suggested as a valuable acquisition to the Cleveland list of incorporators, and Captain Stoddard will await his return before completing his arrangements, after which he will go direct to Buffalo to complete the list, as it is the design to have five incorporators in each of the three cities named.



THE PROPOSED TWIN SCREW STEAMER VOLGA.

AROUND THE LAKES.

CLEVELAND.

Captain Smith Moore, of Marquette, is in the city.

Captain Harry Parker will sail the schooner H. G. Cleveland again.

The steamer N. K. Fairbank is receiving a thorough calking inside and out.

Palmer & Benham have sold 1-8 of the schooner C. H. Johnson to Thomas Sloan.

Wm. J. Pringle will go mate of the new steamer building at Detroit for the Chicago Rolling Mill Company.

Remington Arnold has sold 1-12 of the schooner Erastus Corning to Mary A. Peterson for the sum of $2,000.

James McBrier, of Erie, Pa., and owner of the steamer Fred McBrier, was in the city Monday and Tuesday of this week.

Captain L. H. Weeks, last season master of the schooner B. F. Bruce, will sail the steamer H. B. Tuttle next season.

Captain John Hall, last season master of the steamer New York, of the Union Steamboat Company, is to sail the Havana next season.

Captain Peterson, last season master of the schooner Minnehaha has bought an interest and will sail the schooner Erastus Corning.

Captain A. Manning was skirmishing around the river the other day. He was not drowned, but went into Grover's to shake the water off.

Captain Will A. Pringle will sail the schooner Edward Kelley the coming season. Captain Pringle was last season mate of the Oscar Townsend, and two years sailed the tug William Goodnow.

Frank S. Manton, agent of the American Ship Windlass Company, Providence, R. I., was in the city this week. He has returned home with several orders for the admirable Providence Windlass to be placed on vessels now building around the lakes.

Mr. J. J. Kunstadter, general manager of the Patent Screw Steering Propeller Co., of New York, has been in the city demonstrating the utility of his invention. It was our purpose to illustrate Mr. Kunstadter's system this week, but as the cuts are not yet in hand the article will be postponed until next week.

James T. Rose, vessel agent and broker, of Duluth is in the city. He takes an encouraging view of the coming season, and thinks that Duluth, with 6,000,000 bushels of wheat now in elevators and about 4,000,000 bushels yet to arrive before the last of May, will enable Duluth to furnish her share to the traffic of the lakes and keep her proud position, gained last year, of being the largest grain shipping port on the lakes. He thinks that while there will be considerable increase in the receipts of breadstuffs in western centers, not much of the increase will find the way to Duluth, but will be diverted to Minneapolis and St. Paul; hence Duluth shipments will be about the same as last year.

The case of the Au Sable Transportation Company vs Robert Greenhalgh and the city of Cleveland, was on trial last week before Judge Jones and a jury in the common pleas court. The case grew out of a collision by the barge C. H. Weeks with the Columbus street bridge while being towed up the river by the tug W. H. Doan. The jury found that the company was entitled to damages to the amount of $400 and brought in a verdict accordingly against Greenhalgh and the city of Cleveland. One of the questions decided by the court was that the city of Cleveland is not liable for negligently failing to provide a wooden guard or approach to the bridge. The jury, however, found the bridge-tender negligent and held the city liable with Greenhalgh. The company was represented by Wm. H. DeWitt, Esq., Greenhalgh by H. D. Goulder, Esq., and the city by A. T. Brinsmade, city solicitor.

Captain G. W. Stoddard, of Toledo, who is in the city in the interest of the proposed Rapid Transit Steamship Line, is meeting with much success among our business men and has secured many good names here for incorporators. The captain will go down to Buffalo this evening to complete his mission. The captain's presence here reminds us of an incident that occurred some year, ago, when the Dean Richmond came out new then owned by the Winslows and chartered by Sheldon Pease, general manager of the New York Central boats at Buffalo. Captain Stoddard was mate of the Richmond and among the merchandise taken to Chicago was a large grindtone, which accidentally got broken. Mr. Pease, on the return of the Richmond, met the captain and said: "I understand you broke a grindstone at Chicago?" "Yes, sir," said Mate Stoddard. "How did you break it?" was asked. "Took a sledge and broke it all to pieces," replied Stoddard. "Why did you break it?" asked Mr. Pease. "So that we could get it off the boat easily," said Stoddard. Mr. Pease then asked Stoddard if he knew who he was talking to. The captain replied, "no." "Well." said Mr. Pease, "I am Mr. Pease, general manager of the New York Central line of boats," to which Stoddard replied, "I am glad to know you; you have a d—n soft snap. I wish I had one half as soft. I am only mate on this boat."

Upson & Walton have sold their 1 20 interest in the iron steamship Onoko to J. H. Wade, Jr. This, in connection with Mr. Wade's purchase of an interest in the Wm. Chisholm and J. H. Devereux, looks well for the iron shipbuilding interests. The price has not yet been made public, but no deterioration has taken place in value since the Onoko was launched.

CHICAGO.

Special to the Marine Record.

Alfred Booth, of the firm of Booth & Son, the fish and oyster dealer, is building a steamboat on the shore of Lake Michigan at Chicago. The boat is to carry freight and passengers on Lake Michigan. She is 175 feet long and built of Georgia pine and oak, and twice as large as any ever built at Chicago. Her speed will be from 12 to 18 miles per hour. It is expected she will be ready to launch about the first of May.

The schooner Scotia of Buffalo is libeled for $160 for tow bill by the owner of the tug Castle in the United States district court at Chicago.

Schooner Detroit is in possession of the United States marshall at Racine in the case of a Detroit drydock firm.

The propeller De Pere, of the Goodrich Transportation Company leaves to-night for Sturgeon Bay, the most northern point she has run to since early in December last, although she has plied regularly to Manitowoc all winter. As the managers of that company are shrewd observers and men of long experience, I take it as an indication that they consider the present mild weather presages a breakup of the winter.

The City of Ludington, belonging to the same company, has also been in continuous service between Chicago and Ludington via Milwaukee and Manistee, as has also the propeller F. & P. M. No. 1, between Milwaukee, Ludington and Chicago. It would seem, therefore, that while winter navigation is difficult, dangerous and expensive, an abundance of freight at good rates would find plenty of carriers.

Judge Blodgett, in the United States district court, has decided the admiralty case of the Lake Michigan and Lake Superior Transportation Company vs the propeller Lawrence. The suit was brought to recover damages for an alleged violation of contract on the part of the respondents. In 1881 the libelants, being unable to carry the freight received by it, chartered the Lawrence to transport the surplus. The first trip to Sault Ste Marie resulted disastrously, and the Lawrence being unable to reach the first-named port, unloaded at Detour and Sheboygan. Five days afterward the company began this suit. Judge Blodgett held that the action was premature, no demand for damages having been made on the company by the owners of the freight. He therefore dismissed the suit without prejudice, as well as a cross bill filed by the owners of the Lawrence for damages for a refusal on the company's part to further employ the steamer in the carrying of the surplus freight.

The Hackley and Crawford with much difficulty recently broke up the ice and towed the schooner Southeast down the river to the Illinois Central elevator where she is to load corn for Buffalo, so I am informed.

The following transfers of vessels have been recorded at the Custom House during the past week:

Schooner Lumberman, Harry Smith and John Lang to A. T. Hanson, of Chicago, and Vogta Mashek, of Kewaunee, Wis., all, for $2,500.

Schooner G. D. Norris, Lewis D. Sanborn to Fred Herhold, C. C. Lenz, Fred H. Herhold, and Wm. F. Mitchell, all, for $1,500.

Propeller Oswegatchie, same to same, all, for $10,500.

Schooner C. A. King, John R. Barker to Fred Herhold, C. C. Lenz, Fred H. Herhold, and Wm. F. Mitchell, all, for $1.00.

Tug Bob Teed, Robert Teed to W. H. B. Deane, 1-6, for $1,250.

Captain Wm. F. Mitchell will command the Oswegatchie and tow the two schooners.

* * *

MARITIME LAW.

DAZZLING EFFECT OF BROOKLYN BRIDGE LIGHTS—CUSTOM OF TUGS CROSSING THE EAST RIVER JUST ABOVE THE BRIDGE IS AT THEIR PERIL — COLLISION — APPORTIONMENT.

U. S. District Court, Southern District of New York.

1 The effect of the lights on the Brooklyn bridge is such as to prevent the ordinary lights of craft in the vicinity on the river from being recognized. Prudence, therefore, requires vessels approaching the bridge to slacken their speed, a custom which has already been to some extent adopted.

2. The practice of vessels in coming down the East River to cross toward the Brooklyn shore in the region of Catharine Ferry is not entitled to favor, and in the night is peculiarly dangerous on account of the dazzling effect of the bridge lights. It cannot be justified by any alleged custom, and is, in the absence of special circumstances, at the peril of all vessels that attempt it.

3. Where a collision occurred after dark in the East River on the Brooklyn side, a little above the Brooklyn bridge, between the steamer Pequot and a canal boat in tow of the tug Demerest, coming down, held, that the Pequot was in fault, because the evidence showed that she had not kept a proper watch of the Demerest and also because she had not stopped and backed on the exchange of contrary signals between the two vessels prior to the collision. Held, further, that the Demerest also was in fault in not backing when one whistle was given by the Pequot in answer to her two and also for crossing the river toward the Brooklyn shore at that place and hour.

Brown, J.

The collision in this case occurred in the East River, after dark, a few hundred feet above the bridge, nearly abreast of or a little below Catharine street ferry, and probably about one-third of the way across from the Brooklyn shore. The steam tug Demerest was coming down with the ebb tide, with a canal boat lashed on each side, projecting some forty feet ahead of the tug's stem. At the moment of collision the tug had headed considerably to the Brooklyn shore. The steamer Pequot coming up ran through, and cut off, the bow end of the starboard canal boat, without touching the stem of the tug. There is considerable contradiction as regards the lights seen, or visible; and also as to the signals given and heard.

The witnesses for the Demerest say that from Jackson street down the tug was heading somewhat towards the Brooklyn shore, so that their green light only was visible to the Pequot, which they say was a little on their starboard bow. The Pequot's witnesses say that they saw the Demerest's red light on their port bow, and hence were in no danger from her; and that their attention was necessarily given to the St. John, which they were meeting and passing to the left. It is not certain that the red light alleged by the witnesses of the Pequot to to have been seen at some distance on their port hand was the light of the Demerest; although in the absence of proof of the presence of any other vessels in the vicinity it would seem probable that that red light was the Demerest's. But neither seeing the Demerest's light to port, nor the presence of the St. John on the starboard hand, could excuse the Pequot for not keeping any further watch upon her port side. It is evident that after the red light was seen some considerable time elapsed before the Demerests two whistles were given. At that time she was showing her green light; yet her changes of position and light had not been previously observed by the Pequot. The Pequot was remiss, therefore, in not keeping a proper watch upon her port hand. The Pequot gave one whistle in reply to the Demerest's two whistles. At these contrary signals there was evident risk of collision; and the Pequot was guilty of the further fault of not immediately stopping and reversing as the rules require. The order to reverse was not given until afterwards when too late to be of any use. The weight of evidence also shows that the collision was considerably on the Brooklyn side of the center of the river. It is shown that the usual custom of such tugs coming down the river on the ebb tide is to go in toward the Brooklyn shore, of which the Pequot must have been aware. Whether this custom be justifiable or not, the Pequot knowing it, was bound to watch and see whether the Demerest, though on her port hand when at a distance, was not crossing to the Brooklyn shore as customary. She was in fact doing so; and it was this fact, coupled with the Pequot's want of observing it that brought about the collision.

The Demerest had no other lookout except the pilot in the wheelhouse. I am not clear, however, that he did not have all the notice of the position of the Pequot that a lookout in addition could have given him. But it is clear that the first answering whistle of the Pequot was one whistle only; and therefore the pilot of the Demerest could have heard but one from her. With the vessels approaching at the rate of 12 or 14 miles an hour, and so nearly ahead, the danger of collision from that moment was manifest. It was equally the duty of the Demerest, therefore, to stop and back at once. She did not do so; but waited for a further exchange of contrary signals, when she reversed, but the collision was then inevitable.

The dazzling effect of the electric lights upon the bridge, is such as to add to the difficulties of navigation in the night time to vessels passing each other in that vicinity. Pilots when nearing the bridge cannot properly distinguish ordinary lights just beyond the bridge. Common prudence would, therefore, seem to require of all vessels approaching the bridge a material diminutive of speed.

For a distance of several hundred feet above and below the effect of the brilliant lights of the bridge is to prevent the ordinary lights of vessels in the river from being recognized. In going through this space, boats are in no better position, as respects seeing lights, than in navigating through a fog, and there is the same reason for moderating speed in one case as in the other. The evidence shows that the practice of moderating speed on nearing the bridge has been already to some extent adopted by prudent pilots. Neither the Pequot nor the Demerest in this case seem to have adopted this precaution. If they had done so, the collision would probably have been avoided. The above specific violations of the statutory rules, however, require that both shall be held answerable to the libelants.

The Demerest is, I think, chargable with the further fault in crossing the river toward the Brooklyn shore under the circumstances of this case. The custom of vessels coming down the river to go to the left and near to the Brooklyn shore in the region of Catharine ferry, is not one entitled to any favor, and to cross the river for this purpose from the New York shore when not far above the bridge, and in the night time, is peculiarly dangerous, considering the dazzling effect of the bridge lights, which prevent the pilots of steamers coming up from seeing vessels thus crossing ahead of them, as they ought to be seen to be properly avoided. Crossing to the left under such circumstances is manifestly dangerous to life and property. It cannot be justified or excused by any alleged practice or custom; and I must hold it to be at the peril of all vessels that voluntarily pursue such a practice, in the absence of any special circumstance of necessity requiring it. The evidence shows in this case that below Jackson street the Demerest was still on the New York side of the river; and in less than a third of a mile further down, she is found at least two-thirds of the way, and her own witnesses say much more, towards the Brooklyn shore, and her tow in collision with the Pequot. This crossing to the left was the primary and general cause of the collision. It is probable that the Demerest's red light was seen from the Pequot, and on the latter's port bow as her witnesses allege, at the time when the Demerest was not far below Jackson street. Moreover, if the pilot of the Demerest, could, as he says, see lights for a distance below the bridge he ought to have seen the Pequot coming up; and if he saw her, he was bound to keep to the right. If, on the other hand, he could not see her on account of the bridge lights, nor the Pequot see his lights, the pilot of the Demerest, was nevertheless bound to know that steamers, though not visible, were likely to be coming up, as the Pequot was coming near the center of the river; and he was, therefore, bound to avoid crossing the center of the river and going to the left toward the Brooklyn shore, under the circumstances in which neither could see the other in time to avoid collision.

The libelant is entitled to a decree against both vessels with costs.

January 5, 1885.

THE NEW YACHT ATLANTIC.

Work of designing a yacht to compete for the honor of defending the American cup against the British cutter Galatea is progressing favorably. Good-natured rivalry exists between New York and Boston yachtsmen relative to the merits of their respective designers and builders which will be tested, as was the case between the Puritan and the Priscilla. Mr. Philip Ellsworth, brother to the famous Joe Ellsworth, who sailed the Puritan last season, has made the plans for a yacht to be built under the auspices of the Atlantic yacht club, and furnishes the dimensions as follows: Length over all, 95 feet 1 inch; length on load line, 83.8; extreme beam, 23.2; extreme depth, 12.3; extreme draught, 8.10; draught four feet abaft the stem, 4.5; draught aft, 8.7; draught with center board, 20.6; overhang forward, 11 inches; overhang aft, 10.6; rake of sternpost, 3 inches to the foot; least freeboard, 3.3; hight of rail forward, 1 4; hight of rail amidships, 1.3; hight of rail aft, 7 inches; lead on bottom of vessel, 30 tons: lead on inside vessel, 12 tons.

The specifications will be made out, contracts entered into and the work of construction begun as soon as possible.

ENGINES OF THE S. S. ENFIELD.

The triple expansion engines of the s. s. Enfield, are the first set of triple-expansion engines manufactured by the Central Marine Engineering Company, of West Hartlepool, under the patents of Mr. Thomas Mudd, their managing engineer, and they possess many features of special interest. The cylinders are 21 inch, 35 inch, and 57 inch in diameter respectively, and 39 inch stroke. They are supplied with steam from two single-ended boilers at a pressure of 160 lb. per square inch above the atmosphere.

The crankshaft has only four main bearings, instead of the usual five or six, and these bearings are of enormous length compared with ordinary practice. The crankshaft is designed to suit the valve gear, which is of the "dynamic" order, the one eccentric that is necessary for each engine, being forged solid with the after crankcheek of each crank. The forward cheek of each crank is recessed to receive the flange of the adjoining piece of the shaft, and by this means both eccentrics and couplings (which are the constant impediments to a sufficiency of main bearing in the ordinary design of marine engines) are satisfactorily removed from the body part of the crankshaft, which is then simply carried, throughout its whole length, in the four bearings. Of these bearings, the two inner ones, which each extend from crank cheek to crank-cheek, are each nearly two and a half diameters in length; the two outer ones are made about one and three quarters the diameter in length. All the main bearings run on white bronze over their whole bearing surface, the bronze being run into very stout and rigid cast-iron blocks, which can be removed for refitting or examination at any time without the removal of the crankshaft.

The distance from the center of the high-pressure engine to that of the mean pressure engine, is the same as from the latter to the low pressure engine, so that the crankshaft of any engine will fit any other, and only one-third part of the shaft need be carried as spare gear. Each of these parts is built up of separate pieces shrunk together, the pins being forged from hollow ingots of steel of the finest quality. These pins have a length of bearing more than one and a quarter times the diameter of the shaft. Like the main bearings they run on white bronze, which is put in a similar manner into large cast-iron blocks carried by the ends of the connecting rods.

On referring to the end view of the engines, it will be seen that the bottom of the soleplate is flat, and that the main bearings are supported upon the ship's engine seating right through from front to back of engine, instead of being bridged over from a front stool to a back stool as is too commonly done.

This plan, besides being considered by the builders to be the best, admirably accommodates itself to a new system of erecting engines in the shop which the Central Marine Engineering Company have inaugurated, and which, before proceeding further with the description of the engines, we may here appropriately describe, as one of its best features is the advantage it confers upon the main bearings.

In the floor of the erecting shop thirty-two piles 12 inches square were driven down into a solid stratum of clay, and on these a thick bed of concrete was laid, producing a foundation which no weights that are likely to be put upon it, will ever disturb. On this foundation four cast-iron girders were well bolted, the bolts reaching through the concrete. These girders have planed T grooves in the direction of their length, and upon them were placed four wide girders planed on the under side to slide upon the lower girders, and arranged to be secured thereto at any point by bolts in the T grooves. The upper sides of the upper girders have planed T grooves at right angles to their length, and their upper surfaces are planed all over. Both sets of girders were set absolutely level by the careful use of a very expensive and heavy 16-foot straight-edge and a delicate spirit level.

The bedplate of the engines is planed on the under side, and it is obvious that when it is placed upon the level erecting table its upper surfaces will be level without any straining of its members by wedging at any part. The foundation of the erecting table is so rigid and unyielding that the readings of spirit levels may be confidently relied on to the very top of the engine, no matter what weight has been piled on.

When the engine is placed upon the table a large and very powerful boring apparatus, specially designed for the purpose, is fixed upon the lower tier of girders at one end, and a strong "stay," which is provided with up-and-down and sideways screw adjustments is placed between every pair of main bearings. In these is set by a delicate spirit level an 8½ inch solid steel boring bar about 27 feet long, and by means of boring heads and arbour rests, all the main bearings are bored at one time and faced down the sides. This plan insures absolute truth of alignment of the main bearings, whilst the bedplate is freely resting upon a level surface, and the engine is not again disturbed until completely erected. Certain planed projections are put on the bedplane to enable the engine to be re-erected on board ship in precisely the same condition as that in which it stood when bored on the erecting table.

The system has another advantage in that when completed the engines can be bolted to the upper tier of girders and steamed in the shop before leaving the hands of the erector. This was done in the case of the engines of the Enfield, the steam being supplied by the factory boilers and the injection water drawn from the dock adjacent to the works. This system, expensive as it doubtless is in first cost, has proved so highly satisfactory, and offers so many obvious advantages, that the firm are now engaged in extending the table to a length of 70 feet, and contemplate at no distant date, if improvement in trade warrants it, a further extension, making a total of 150 feet of truly leveled table in one straight line, the upper members of which can slide to any position upon the lower to suit the size of engines being erected, and so as to waste no space between the several engines erecting at one time.

To return, however, to the description of the engines of the Enfield; it will be apparent that in designing these Mr. Mudd determined to do everything within his reach that would be conducive to the preservation of the crankshaft, feeling sure, as he does, that by far the greater number of crankshafts that fail are fractured by the opening and closing of the crank jaws at each revolution due to the main bearings getting out of line. The quality of the bearing metal and the extraordinary length of bearing surface are relied on to prevent wearing down; the system of planing the under surface of bedplate, erecting and boring on a leveled table, certainly insure the bearings a fair start, whilst the plan of supporting the bedplate in the ship right under the bearings in the line with the main strains, and the providing of an unusual quantity of metal in the bedplate are responsible for taking the reciprocating strains in a rigid and unyielding manner.

In large engines like those of the Enfield it is of course necessary to make the main framework castings in more than one piece, and Mr. Mudd has struck a new line in this matter by cutting the condenser horizontally in the middle, instead of vertically between the back columns as is usual. This may appear an exceedingly insignificant change, but it is certainly most fruitful of good results both to the engine and to the constructor. It gives the engine the advantage of having the whole of its base in one strong casting, far stronger than can be got by the plan of making a separate bedplate alone, with the whole condenser set above it as a separate casting; and it has the merit over the plan of cutting the condenser vertically, that the whole of the vacuum joint is above the starting platform, where it is both easily examined and not likely to go wrong. The engine has yet another advantage from it, in that there is no vertical joint anywhere, it being a common practice to have vertical joints either just in front of or just behind the main bearings. These joints are never safe without keys, and are certainly better avoided altogether.

The advantages to the builder of cutting the condenser horizontally will be obvious to all practical engineers. The lower casting, which in the engines we illustrate weighs about 18 tons, is moulded upside down. The mould is only some 4 feet 6 inches in depth, is flat on its upper side, all the heavy cores rest solidly down on the bottom of the mould, the spindles of the pump cores are vertical, all the joints and main bearing are at the bottom of the mould where soundness and density of metal is insured, and any dust in the mould comes to that part of the casting where it is of no consequence whatever.

Similarly, the upper casting with its three columns is moulded with the guide faces down and the main joint vertical, the depth of mould being even less than for the lower casting. Several sets of these large castings have now been made without one being lost, and the advantages of the system are fully confirmed.

It will be seen that special attention has been given in the design of these engines to secure rigidity of general structure. The two box section forked columns are admirably adapted for giving both fore and aft and thwartship stiffness, and by making the inner lines of these columns quite vertical, the strains are conveyed in a most direct manner to the bedplate without giving the slightest chance of any alteration of form. These columns are used as oil tanks, and hold three hundred gallons of oil. The connecting rods are 18 inches more than four cranks in length, and are adjustable for length as well as for wear.

The main guides are carried by the back columns—which we have already mentioned as being cast in one with the upper part of the condenser—and consist of separate guide plates bolted to the flanges on the columns, the guides having wrought-iron pipe watercourses cast in them for the circulation of cold water, provision being made for the clearing of each pipe in case of its getting stopped. Between the guide plate and the column an air passage is also provided for the circulation of air. The go-astern guides are bolted at the sides in the usual manner. The crossheads are fitted with cast iron adjustable slide shoes, which are fitted upon a taper in such a manner as to give the crossheads a thoroughly tight hold of the shoes both when going up and coming down. For want of such a provision crossheads that are fitted with shoes that have only a flange at the top have been known to leave their shoes when the guide has become hot, the almost inevitable consequence being a serious breaknown.

The piston rod glands are all fitted with a gun metal worm and wormwheel arrangement by means of which all the four gland nuts are tightened up together by a handwheel. The engineer can, with this attachment, tighten the glands with the greatest ease when the engines are running full speed without the slightest danger to himself.

The cylinders are cast separately and joined together by faced joints the full length of the cylinders. These joints are not steam joints, but mere bracket attachments. All the valves are piston valves, arranged in a uniform manner at the back of the cylinders and in one straight line, the valves being thus easily overhauled by placing a separate lifting beam and tackle in the engine skylight immediately over them. It will be seen that a line drawn through the centers of the valve cylinders is not parallel to the center line of the engines but oblique to it, the valves being each

such claimants as are entitled thereto, but is a proceeding simply to limit the liability of the petitioner by allowing it to give stipulation in the admiralty for the value of the offending thing, whereof it was at the time, the owner, obligating itself with sureties to pay into court whatever sum might be decreed against it by the court to the extent of such stipulation; which stipulation must in no case exceed the value of the vessel, and her freight then pending, and an attempt to remove a common law case from its appropriate jurisdiction into the admiralty which is without jurisdiction, thereby depriving the plaintiff of the right to a trial by jury.

II.

That the act does not embrace injuries to real estate and the property therein contained or torts done on land to property or things not engaged in trade and traffic, and commerce between foreign nations or among the several states, or with the Indian tribes, but only injuries occuring through the default or treachery of the master or mariners without the privity or knowledge of the owner of the offending vessel, to property which is the subject of commerce and trade in transit on the high seas, the great lakes and the navigable waters of the United States.

The act is to be construed *inter se et ad homines*, and is to be confined to ship owners, foreign and domestic freighters, passengers and maritime merchants. The act is one of enumeration of the parties and things which are to be affected by it; and all the parties and things enumerated are limited to persons and things maritime. The first section exempts ship owners from loss or damage by fire to goods on board the ship; the second exempts the master or owner from loss or damage to jewelry, precious metals or money put on board the ship; the third section, to any embezzlement, loss or destruction by the officers, crew or passengers or any other person of any property shipped or put aboard said vessel, or for any loss, damage or injury by collision, or for any act matter or thing, loss, damage or forfeiture done or incurred.

No case can be found except that of the Thomas Hood, decided in the Northern district of Illinois, in which it was attempted by a proceeding similar te that of the case at bar, to apply the act of 1851 when the injury or tort was committed on land.

The court, without the benefit or argument, and without the question of jurisdiction being raised, in a short decision ruled that the act applied. The point was raised in the Plymouth, (3 Wall., 20) but the court finding it had no jurisdiction, on account of the tort not being one cognizable in the admiralty, declined to take any notice of it, and the fair reference is that the Supreme court was of the opinion that the act did not apply to such a case. All the mischief that is to be remedied by the ship owner having to respond to suits at common law, was present in that case.

The reasons assigned in the case of the tug Thomas Hood by the court in deciding the case, with all due respect to the ability of the judge who decided it, we think are far from being satisfactory. Congress in withdrawing river or inland navigation from the benefits of the act, had clearly indicated that for the injuries which a vessel might inflict along the shores of rivers, for those torts committed on the property on land of strangers in no privity with trade and navigation, the ship owner shall make full satisfaction in common with all other tort feasors. To otherwise interpret it the compensating law of reciprocity would be so violated and disregarded as to shock every sense of justice and equity. If such property on land should inflict a corresponding injury upon a vessel, the owner of such property could not have the benefit of any such act.

It was not the intention of congress to relieve the ship owner of *all* liability for the act of his servants, when such servants were mariners, or for injuries committed by them everywhere, on sea and on land. It was a sufficient encouragement to ship owners to limit their liability for the torts of their agents when those agents were beyond their control and on the high seas. It was an act dealing with trade and commerce, and with injuries and damage inflicted by or with persons engaged in this pursuit. It was an act having no reference to injury to real estate, or to things done on land. It might be, as was said by Judge Blodgett, important to the ship owner, that he should be relieved everywhere, both on land and sea, for the negligence and treachery of his mariners, but congress would never create a privileged class consisting of foreign and domestic vessel owners, whose servants might commit trespasses on land, and limit the liability of such a class, and refuse it to all other classes.

The first section of the act of 1851 supports and gives countenance to this construction; this section exempts ship owners from liability for losses on board of their ship by fire "unless such fire is caused by the design or neglect of such owner or owners," and the last section declares that the act shall not apply to any vessel of any description whatever used in rivers or inland navigation.

Therefore, the provisions of the act must apply only to foreign and American vessels not used in river or inland navigation, and to their owners, and the language of the third section, after providing for any loss by collision provides "for any act matter or thing, loss, damage or forfeiture occasioned or incurred without the privity or knowledge of such owner or owners, shall in no case exceed the amount or value of the interest of such owner," etc.

The first section of the act, Sec. 4282 of the Rev. Stat., confines the loss not only to goods shipped on board, and by reason or by means of the fire which happened, but "to the ship," or "on board of her,"—by this is meant a fire which happens to the ship physically, and does not apply to a fire where the ship herself is not touched by the fire at all. The statute means that the fire which happens to or aboard the ship must be the cause of the loss.

By judicial construction, the third section is extended to losses by fire happening without the privity or knowledge of the owners, but it certainly never was intended to extend the statute so as to embrace any other loss by fire except by means of fire happening to or on board said ship.

In cases where there is no limitation of liability for fire under the contract, and the limitation is purely by virtue of a statute, and where that statute is in derogation of common law, the *onus* is upon the party for whose benefit the statute is made to bring himself within the provisions of it. Under this first section, the owner is not entitled to the benefit of the statute, until he first shows that it did not happen by any neglect or design on his part. In absence of all proof, upon whom then is the burden of proof? Surely upon the shipowner, fire being one of the losses presumed to arise from negligence in the absence of proof either way, this proof makes the owner guilty of negligence.

The exception by limitation of a statute would not affect the *onus probandi*. That statute merely provides that the owners shall be excused if the fire is not caused by his design or neglect, but he must prove these things. This, he and his servants alone can do. It is in his power and interest to show the facts, not so with the shipper or party injured. To place the *onus* upon them would be to deny them of remedy; 2 Richardson, (S. C.) 307, *id*, 286; 1 Strobhart 203, 218; Stokes v. Saltonstall, 13 Peters, 181.

Whatever might have been the ancient general maritime law is indifferent. It was the general maritime law of the United States at the time of the adoption of the constitution down to the time when the act of 1851 was passed by Congress, that the liability of the wrong-doer for a maritime tort, when a vessel owner, for the acts of his servants required that he should make full satisfaction; and when the act was adopted, that permitted him to limit this liability, it was expressly provided as in the English act and all others, that it should not apply to any vessel of whatever description engaged in rivers or inland navigation.

[*To be continued next week.*]

THE COMPASS.

One of the most delicate and important fittings in a modern vessel is the compass, and it is at present probably the least capable of control and less reliable than any other mechanical device upon which the mariner depends for the successful completion of his voyage and his safety. The magnetic north is a most irregular and troublesome datum on which to depend for regulating the course of a vessel, since it is constantly upon the move, having its periodical variation east or west of the true astronomical north. Of course this variation is known and tabulated for the use of mariners, but there are an infinity of small irregular variations of which no record can be kept, and which can at no time be foreseen. Apart from the aforesaid irregularity of the magnetic north, the instrument in common use as a mariners' compass is itself subject to a large variety of disturbances. This tendency to disturbance is now very greatly increased by the general use of iron and steel for the building of the hulls of vessels not only of the navy, but of the mercantile marine. Such hulls have themselves, particularly those made in steel, the power to become more or less permanently magnetized, and thus to present enormous deflecting influence upon the compass needle. The correction of these disturbing effects, together with the errors known as quadrantal, semicircular and heeling, are sought to be obviated by a variety of ingenious contrivances, such as the insertion of fixed magnets within or about the compass box, and further by the use of unmagnetic iron globes. Sir William Thompson has made his name famous for the multiplicity of ingenious devices that he has from time to time contrived for this purpose, and we see that he is again putting out further improvements dealing with these errors in a practical shape, for the benefit of mariners. But after all this has been done, and with every credit to the extreme ingenuity shown by Sir William Thompson and other scientists in effecting corrections of known errors, there still remains so large a margin of possible errors, which may arise from time to time, owing to the alteration of the magnetic conditions under which the compass was first set, that we cannot but feel that we are still far from having an instrument of such reliability as might be desired for the purpose of always indicating his true course to the mariner.

Probably in the course of another generation, so rapid are the present strides of improvement and invention, our descendants will be surprised at the complacency with which we put up so long with an instrument so generally known to be irregular and unreliable in its action as the magnetic compass. It is, of course, difficult to imagine or foresee in what way such an instrument may be superseded or replaced, but we may give our ingenious readers the benefit of such ideas as may strike us upon the subject. We have heard not long ago, of a compass still magnetic in its action, which claimed by the combination of two independent needles to indicate a duplicate error of deflection, whatever that error might be, one needle deflecting in one direction and the other deflecting in the opposite direction on either side of the true magnetic north. It is evident that should the action of this device be accurate in the above respect for all cases of disturbance, the mean reading of the two needles would always give the true magnetic north at any rate. Whether such a compass will be found in practice always to fulfil these conditions, we have no means of knowing, but we have not yet heard of such an appliance being ever successfully used at sea. We have again heard, that the light itself was affected by the lines of magnetic force running north and south; so that, could means be devised for clearly indicating this effect upon the light of day, by rendering it visible to the mariner, he would require no further indication as to the true magnetic north. Such an indication, were it possible to practically achieve it, would, at any rate, be uninfluenced by any local magnetic disturbances which would eliminate a great number of small irregularities. As a suggestion, we might point out that the true astronomical north is the center of the rotation of this globe, which takes place round its own axis, and we think it within the bounds of practicability that an instrument might be devised, while partaking of the rotary movement of the earth, to always indicate the direction of the axis of rotation. If this were possible, we might dispense with the magnetic needle altogether, and in that way avoid the whole of the irregularities arising both from local disturbances and from the irregular and known movements of the magnetic pole.—*Marine Engineer.*

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Eastward.	Arrive	Depart.
No 4, Fast Limited Express	*2 55 A M	*3 05 A M
No 8, N Y, B & A Express	*8 25 A M	*8 50 A M
No 26, Elyria Accommodation	†7 45 A M	
No 24, Buffalo Ac'm via Sandusky	†10 30 A M	†10 50 A M
No 24, Toledo Accom via Norwalk	†10 30 A M	†10 50 A M
No 12, N Y & B Fast Express	*2 10 P M	*2 45 P M
No. 14, Special New York Ex		3 00 P M
No 2, Night Ex via Norwalk	9 40 P M	†10 00 P M
No 22, Night Ex via Sandusky	†9 40 P M	
No 26, Conneaut Accommodation	†4 25 P M	

Westward.	Arrive.	Depart.
No 1, Fast Limited Express	*12 15 A M	*12 25 A M
No 23, Mich Express via Sandusky	*2 15 A M	
No 3, Chicago Express via "	‡6 00 A M	6 30 A M
No 25, Mich Accom Norwalk		†6 30 A M
No 21, Toledo Ex via Norwalk	†12 50 P M	†3 30 P M
No 5, St Louis Ex via Sandusky	*10 50 A M	*11 00 A M
No 9, Chi Pac Ex via Norwalk	6 15 P M	*6 40 P M
No 31, Elyria ac to Elyria only		†4 30 P M
No 27, Conneaut Accommodation	†8 10 A M	

Sunday train for Nottingham—Depart 8:15 a. m, and 1:45 p. m.; returning, leave Nottingham at 8:50 a. m. and 3:45 p. m.

Reference marks—* Daily, † daily, except Sunday, ‡ daily, except Monday.

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Buffalo Accommodation	*10 40 A M	*10 45 A M
Chicago Accommodation	*9 02 P M	
Local Freight	*11 45 A M	*12 15 P M
WESTWARD.	Arrive.	Depart.
Chicago Accommodation		*6 45 A M
Fostoria Accommodation	*4 46 P M	*4 51 P M
Local Freight	*12 20 P M	*12 50 P M

ROCKY RIVER ACCOMMODATION.
Depart—*7:45 a. m., *1:35 p. m.

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CLEVELAND, OHIO, THURSDAY, FEBRUARY 18.

A RIGHTEOUS DECISION.

Judge Brown, in the United States district court, Detroit, has just rendered an opinion on the question of shortage in grain cargoes, which will prove a valuable precedent for vessel owners and masters. The case was brought against the schooner Lizzzie A. Law in an effort to recover the difference in the amount of grain called for in the bill of lading and the quantity actually delivered. Judge Brown declared that it was only necessary for the owners to show that all the grain received in the cargo was delivered. As all efforts at reform in the matter of shortage and bills of lading have heretofore proved of no avail this decision is highly gratifying, and if followed up by vessel men will prove of great value as a precedent.

No other branch of business in the country is subject to wrongs such as lake carriers are in elevator shortage without some form of redress, and the suggestion was made in the MARINE RECORD, Vol. VII, No. 38, that owners should refuse to account for more grain than they actually received, notwithstanding the terms of the bill of lading, taking their chance for justice before a court. If this were done the wrong of being obliged to pay for shortage, justly complained of, would soon disappear. It will be necessary, however, for owners and masters to adopt some system whereby shippers and receivers may be assured that the carrier is acting in good faith, and to prove beyond cavil that cargoes have not been broached or tampered with. Positive testimony to this end may be found in a system of sealing the hatches after the cargo is aboard, which should remain intact until by an official at the elevator at the port of destination, the seal is broken for the discharge of cargo. While it is not our desire to deny that officials of elevators believe that their finding of shortage is just we do say that if they could not realize on the quantity not produced their complaints would disappear entirely, as against the vessels, and it would then become a war of the elevators, and they would be foemen worthy of each other. That is, they would be compelled to seek redress where the cause or difference arose. It has been known for years that the elevator system of the country stands sadly in need of investigation by national, state and municipal government, but every effort to obtain legislation to that end has failed. If by this decision of Judge Brown the owners of elevators can be made to investigate each other we may, by logical sequence, look in vain for cargo shortage. It will have disappeared and become a thing of the past.

In case bills of lading can not be modified to conform to the new order of things, and notwithstanding the hatches are sealed, shortage still continues to occur, the vessel man should protest against payment and go with the case before the admiralty courts, where with Judge Brown's decision as a precedent, he has many chances in his favor. No elevator management has, to our knowledge, been led to confess that there is any chance for mistake in their system, or drafts or tally; but it is known that there is such mistake. Not only this; it is known that tally can be made to correspond, say at Duluth and Buffalo. Therefore if the complaint can be settled without looking too closely after the mystery of the elevators, by taking the difference out of the pockets of the elevator people, it would be a grand point gained.

STEAM ENGINE ECONOMY.

It unfortunately happens that there are exceedingly few records of engine trials on our lake steamers, probably owing to the expense and inconvenience of placing the necessary apparatus aboard for making an exhaustive and reliable trial. It is for this reason that we lay before our readers a comparative trial on the steamer J. H. Devereux, which was made last season by Mr. J. F. Pankhurst, of the Globe Iron Works, while on a pleasure trip up the lakes, to whom we are indebted for permission to make the results public.

The engine on which the experiment was made was tandem compound, the high pressure cylinder being twenty-seven and the low pressure fifty inch bore by thirty-six inch stroke. The distribution of the steam is effected by ordinary slide valves, with adjustable expansion valves at the back, and the engine was supplied with steam from an ordinary return flue boiler, ten and one-half feet in diameter and sixteen feet long. No preparations were made, such as cleaning tubes, cleaning fires, and having everything in the most favorable circumstances as is usual in regular engine trials. The object of the test was to get at the amount of coal actually consumed per indicated horse power per hour developed while doing ordinary every day work Before the trial commenced all coals were cleared out of the fire hold. In commencing the experiment at 8 a. m., the coal was taken from on deck, accurately weighed, lowered into the fire hold in an ash bucket, and tallied by two men under the supervision of the chief engineer.

The water level in the boiler was marked, the pressure of steam noted, and the usual amount of fire in the furnaces, which was kept the same as though no trial was being made. The steam was kept at ninety four (94) pounds and only varied two pounds during the whole trial, which is remarkable, considering the fact that the fireman had no instruction to keep the pressure steady. When the trial stopped, at 12 m., the fires, water level, and steam pressure were the same as on the start, and the mean of seven observations, taken at intervals of about thirty minutes showed a water consumption of seventeen pounds, and the engine developing an indicated horse power, on a pound and sixty-three hundredths of combustible per hour.

The Devereux came out May 23 and laid up at Chicago November 26, 1885. During the season she made nine and one-half trips, running a distance of seventeen thousand and seventy-four miles, carrying forty one thousand seven hundred and seventy tons of freight, and towed schooners averaging eleven hundred tons each, a distance of five thousand four hundred and twenty-nine miles. Her average speed for the season was nine and eight hundredths miles per hour. The actual cost of fuel for doing the above work was 16.71 cents per mile, including harbor and all other work. When going alone her ordinary speed is ten miles, and when towing a twelve hundred ton vessel, eight and one quarter miles per hour, when cutting in small cylinder at twelve inches, or when cutting at fourteen inches she will make eleven miles per hour, when going alone in smooth water, with a cargo of twenty-two hundred tons.

OBSTRUCTION TO NAVIGATION.

Colonel O. M. Poe has been instructed by the Secretary of War to make report to the department regarding obstructions to navigation in his district and in compliance with this order makes the following charges and suggestions:

"The present project for improving Saginaw river, which consists of making a channel of twelve feet in depth from the head of the river to the Portsmouth bridge, Bay City, and of fourteen feet thence to Saginaw bay, provides for a channel 200 feet wide. In laying out the lines of the proposed channel it has appeared desirable in most localities, where navigation is obstructed by bars or shoals, to establish these lines so as to connect the deep water above and below each shoal as straight and direct as possible. In such cases some of the mill booms or store booms may be considered obstructions in the prosecution of the project of improvement, even though they were located and built by their owners before new channel lines were projected by the government.

"The Saginaw river is spanned by nine bridges. None of these can be considered as interfering with free and safe navigation, except, in a general sense, upon the hypothesis that all bridges are obstructions to some extent, and are built wherever the necessity for safe intercommunication between two shores of a river is greater than the inconvenience or damage to the navigation of the stream.

"Paramount in importance to the location of booms and bridges in reference to projects of river improvement is the location and construction of lumber docks by private parties owning mill property upon the shores of Saginaw river. Mill owners have always built and extended their docks into the river as far as they needed the facilities for storing and shipping the products of their mills, regardless of how far these structures might encroach upon the navigable channel of the river or interfere with present or future projects on the part of the United States for the improvement of such channel.

"Where mills are located on directly opposite sides of the river notably in the cities of Saginaw, East Saginaw and Bay City, the building of lumber docks out into the river in this arbitrary manner has in many localities narrowed up the navigable channel to an extent which is likely to, and in some cases does, interfere with the preparation and execution of a general project for the permanent improvement of the river. The local authorities of the above named cities have prescribed certain dock lines up to which lumber docks may be built, but as these lines were not determined in conformity with any government project, they cannot be adopted or considered of value by the United States.

"As the lumber business increases every season, and more facilities for storing and handling lumber are constantly required, and as the mill owners themselves are interested in all government improvements in aid of navigation, it seems appropriate that the United States engineers should be given jurisdiction over the location and constructions of all docks built or proposed to be built on Saginaw river adjacent to the navigable channel, as well as over the location of booms and bridges. By means of such authority on the part of the United States the arbitrary encroachments on the river channel by docks and booms could in future be checked, while, on the other hand, many mill owners would be enabled to extend their docks so as to come up to an established dock line, which may be determined in connection with the general improvement of the rivers by the United States."

WE are indebted to the Duluth Herald for the estimate given below of the lumber shipments by lake for the coming season, and, added to what has gone before in these columns, will certainly assure vessel men of a prosperous season, and give them courage to bull the freight market: The Duluth Lumber Company have contracted to ship 30,000,000 feet of lumber to Chicago by lake, most of which is to find a west and southwestern market. It is supposed that the railroads west and southwest from Chicago will give sufficient rebate to pay for the lake freight from the port of Duluth to the port of Chicago, thus depriving the railroads leading southwest from St. Paul from getting this business with their high tariff. The lake freight from Duluth to Chicago will be about $1.75 per thousand feet. The shipments of lumber next year from this port will be very large. Last year 5,000,000 feet of lumber were shipped from Duluth to Saginaw and nearly a million bushels of wheat to Milwaukee. This year the same will be done, only to a greater extent, and this year a good portion of our lumber is sold to Buffalo and Albany parties, to be shipped by lake, commencing on the opening of navigation. The shipments by boat from Duluth to lower lake ports will be greater this year than ever before. The output of iron ore will increase 50 per cent., the wheat trade is growing and beside these the lumber shipments by lake will increase from nothing of a year ago to mammoth proportions. All this means a great addition to the boats already trading to Duluth.

SCIENCE says that Lieutenant Dyer of the United States hydrographic office has compiled from the "Monthly pilot charts" a hundred or more accounts by sailors of the use of oil to lessen the dangerous effects of "combing" of heavy seas during gales of wind. The hydrographic office has so far only aimed to record the experiences of mariners as reported at that office, and has not taken any decided ground as to the merits of the controversy. The mass of evidence collected is sufficient, however, to warrant the careful testing of this claim of the efficacy of oil in stilling troubled waters and the government should at an early day detail some officer, and supply him with a vessel, that proper experiments may be made. So far as the sailors' yarns go, it appears that mineral oils are not so effective as vegetable or animal oils; and it is interesting to note that their evidence has led some of the insurance companies and steamship lines to insist upon the use of oil when occasion should require.

THE CLEVELAND CITY FORGE AND IRON COMPANY.

One of the busiest and most enterprising forges in the country is that conducted by the above named company, under the immediate management of Captain L. M. Coe, in Cleveland. The furnaces roar and flame proudly, as if they were aware of the honor of turning out on the immense cranes the glowing iron to be shaped into form upon which the wheels of commerce will revolve throughout the United States, on the mighty ocean and capricious lakes and rivers, on the rail and in the mills. It is worth recording that the principal eastern shipbuilders, those on the Delaware river, in New York state, and in New England, in fact the shipyards from Maine to Georgia have their heavy work done by the Cleveland city forge.

The company has been twenty three years in business in this city, and in 1881 they began to build on the present site and commenced work there the 31st of July, 1882. In and around the buildings, wind many tracks to convey the iron, crude and manufactured, from place to place, and piles of scrap and ingots are being actively made ready for the furnaces by hundreds of workmen. The ponderous hammers return their heavy sound as they fall upon the yielding iron shaft weighing hundreds of tons, and the huge lathes busily turn the product of the hammers to a finished article ready for its place on shipboard.

When the firm commenced to build on the ground now occupied it was thought that they had calculated on due increase of business, but before the end of the third year they realized the mistake. In fact, a visit to the forge will convince one that the manager has carte blanche to provide for the workmen any tool that the requirements of trade demand, from the most ponderous fifteen ton hammer to the delicate automatic machine that cuts right and left thread on the turnbuckle, while conversation with the foremen who preside over the labor of each department will show that the object of the company has been to place in charge of every department the best mechanics to be found in the United States.

The original hammer shop was 820 by 80 feet, to which has been added 120 by 80 feet, and in which there are thirty-nine furnaces, with twenty-two hammers, ranging from one-half ton to fifteen tons, which are served by upward of sixty cranes, with capacity of one-half to one hundred tons, and beside the other work, five hundred car axles can be turned out daily.

To accommodate the blacksmith shop it was thought that 120 by 45 feet would be sufficient, but it has been found necessary to extend it 75 by 100 feet, which will be done at once.

The turnbuckle shop, 165 by 40 feet, has also proved too small for the business, and an addition has been erected, 90 by 45 feet, with a furtner addition to be made in the spring, 26 by 75 feet. This shop now contains three machines and one other building, and has six furnaces. The work is all done by pressure in dies and the form and welding are perfect. The link and pin shop is 312 by 65 feet.

The old machine shop, which was 105 by 80 feet, has been enlarged by the addition of a building 120 by 45 feet, and another structure, 105 by 60 feet, will be erected to accommodate new plant soon to arrive. This addition will necessitate the removal of the office.

In addition to the buildings detailed, there are twelve others, including store houses, pattern shops, tool houses, etc., etc., covering hundreds of feet.

As has been said the rapidly growing business of the forge has demanded the addition of the largest and most approved plant. Among that which has been added during the year is an upright fifteen ton hammer, served by two one hundred ton cranes which are the largest in the country, and two fifty ton cranes. Each crane is worked by two engines beside a double engine to rotate them. The furnaces are 22x11x9 and there are two large boilers. In the machine shop there is a new double head lathe, built in Scotland, 65 by 60 in the swing, and two 63 inch swing lathes, one with 26 and the other 34 feet. There is one lathe yet to arrive, the largest ever built in this country, which is 10 feet swing and 34 feet long. There is also a new boring mill in this shop, with a swing 16 by 5 feet, and another with a swing 5 feet square; a planer 7 feet square and 40 feet long, and another to arrive 5½ feet square by 36 feet long; and a slotter 56 inch stroke and one 30 inch stroke, each weighing sixty tons. In addition there is a large variety of smaller tools to work in every department.

Every day huge shafts or cranks, turn-

buckles, links and pins or axles are shipped by the car load, and all will acknowledge that this is an enterprise of which Cleveland may be proud. The officers of the company are: President, R. H. Harman; vice president and general manager, L. M. Coe; secretary and treasurer, G. F. Ely; assistant manager, R A. Harman.

OBITUARY.

Captain James Donley, of East Saginaw, died at 7:30 o'clock February 10. Deceased has been ill for some time past, suffering with a complication of liver and kidney troubles, which finally proved fatal. The captain was born in Ireland in 1830, and came to America when but a child, his parents settling in Hamilton, Ont. He made East Saginaw his home some thirty-one years ago, and first worked in a mill there, later on acquiring an interest in what was known as the Burnham & Still mill in South Saginaw. When this mill burned down in 1866 he bought the old side wheel steamer Alida, which many will remember. After that he branched out into the vessel business more extensively and has since owned many a craft whose names are familiar to all interested in marine matters. At the time of his death Captain James and his son Edward Donley owned barges J. E. Sparrow and E. F. Gould. Last season deceased sailed the Sparrow and his son the Gould. Captain Donley leaves a wife and two sons to mourn his loss. The funeral took place from his residence, 421 South Washington street, on the 11th and the remains placed in Brady Hill cemetry.

[*Around the Lakes Continued from 1st Page.*]

DETROIT.

Special to the Marine Record.

Feb. 16.—Notwithstanding the alternate cold snaps of the present winter the opinion is quite prevalent that there will be an early opening of navigation, and already a movement has commenced arranging for steamers to ply on the rivers. The steamer Idlewild has been taken in hand and her machinery is being overhauled and improved, so that she will be in complete readiness to commence plying as soon as the opportunity is offered.

Since my last letter the steamer Northwest has been removed from her winter moorings to the Detroit Drydock Company's shipyard, and the work of converting her into a river boat is already well advanced. She has been shorn of her upper works, and instead of her former graceful appearance she looks like a skeleton. It is thought that with the alterations in contemplation she will be improved in speed, with less side out of water, while her cabin arrangements will be entirely changed for the better, and give ample space for the accommodation of excursionists who largely patronize the route. Her length will be the same.

A visit yesterday among several steamboat owners and agencies afforded no enlightenment relative to appointments, for the reason that the season is not far enough advanced.

Advices from Mackinaw, up to Saturday last, report the Straits not in bad condition, and that up to that date no teams had been able to cross that thoroughfare, while the steamer Algomah's trips are being performed with unusual regularity.

The mild spell of weather a few days since cleared the river almost entirely of ice, but on Monday another cold wave found its way here.

The principal excitement within the past few days in this locality, and which rarely occurs, is a strike among the ship carpenters, at two or three points. Meetings have been held and the subject warmly discussed, but at this writing nothing definite has been arrived at. Yesterday it was stated there were two hundred and fifty men, all told, who were idle. They demand $2.25 a day for ten hours' labor. The men in the eastern part of the city have been receiving $2 per day for ten hours' work. At Springwell's and Wyandotte the same wages have been paid for nine hours' time. The companies are to-day having the question under consideration and there is but little doubt the difficulty will be satisfactorily arranged. No one hereabout has ever heard of a strike among shipmasters for the very reason that there are too many on the anxious seat, and likely to remain there until long after sailing has commenced.

Wednesday and the day following the United States marshal will dispose of the tugs and vessels, owned by Murphy Bros., which may open up a chance for a few of the disconsolate, and not a few are patiently awaiting the coming results.

Thomas W. Noble the Detroit sail maker, has ordered from New York city some canvass such as the yacht Puritan's sails were made of. It is of a superior quality, and Mr. Noble will use it for some new yachts now in process of construction in this city.

Charles Potter made a foolhardy attempt to navigate in a small boat through the ice from Windsor to Detroit. His brief experience taught him that the thing could not be done. The ice jam carried him well down the stream, when the ferry steamer Victoria went to his rescue and brought him safely to dock.

Quite a number of vessel owners here, in view of Judge Brown's decision on the shortage question, are going to unite for the purpose of breaking up the elevator shortage business, and in order to effectually carry out such a proceeding, when their vessels are loaded with grain, the hatches will be sealed for the voyage when it will be proved by the seals and the testimony of the crew that the cargo was not disturbed while en route. Should this not prove satisfactory to consignees the first case of shortage will be taken into the courts.

James T. Rose, vessel agent and broker at Duluth, was in this city yesterday en route homeward, wind and weather favorable. Captains Riordan and M. J. Gavin, of Buffalo, had a few hours sojourn here also.

J. P. Donaldson & Co. will furnish the entire fit out for the steamships Nos. 74 and 76, building by the Detroit Drydock Co.

Messrs. McWilliams & Co. had decided in the superior court of this city a claim in their favor of between $400 and $500 against the Murphy tugs, and also a second claim of $1,200, due same parties, to satisfy which a steam pump which was a part of the Kate Moffat's outfit, was seized and will be sold.

A case of long standing is now in the courts here, in regard to the rightful ownership of the barges C. H. Weeks and Keepsake, which were purchased in 1881 by John E. Potts, lumber dealer at Oscoda and resident at Detroit. At the time of purchase it is claimed that Mr. Potts was not a naturalized citizen and both vessels were accordingly seized and released under bonds. The attorney for Mr. Potts claimed that action in the matter should have taken place within three years. Judge Brown, however, decided that the statute of limitation runs for five years and the libels will be proceeded with immediately.

Another decision was also given by Judge Brown on Saturday, bearing upon the question of liability on the barge Church for damages done to a bridge at Black River in Port Huron in the spring of 1884. Aside from the valuation of the barge the owners were sued for whatever discrepancy might arise. They asked that the city be restrained from presenting the suit in the St. Clair circuit court. A temporary decree was granted which will be made permanent if the city's claim is found to come within the statute. Proof will be taken in regard to this and all other claims against the vessel.

HALL.

MT. CLEMENS.

Special to the Marine Record.

The work on the towbarge Nellie, which is to be fitted up for a passenger boat, is progressing very rapidly. The frame for her cabin is all up, and about half of the cabin is completed. She will be ready by the opening of navigation.

Abutments, with piles, are being erected at Market street bridge, and considerable oak planking is to be laid. The work will be finished in thirty days. The job was let for $950.

The city is building a new dock at the foot of Shelby street, which will be 250 feet long, made of oak and filled up solid, and will be completed in fifteen days.

Engineer George Pelkey, first engineer of the J. S. Ruby last summer, lost his right eye by having an eye-tooth extracted last fall. He has been very sick all winter, but is now rapidly recovering and will probably be well enough to sail when spring opens.

L.

LUDINGTON.

Special to the Marine Record.

This has been a remarkable week for business across Lake Michigan, the F .& P. M. steamers, each making four round trips in six days. The weather has been mild and rainy with very heavy fog.

Captain Carter, formerly of the steamer Marshall F. Butters, is getting on finely with his new steamer at Milwaukee. As yet no appointment has been made to fill his place.

The captains of the railroad steamers report very little ice between Ludington and Milwaukee.

D.

ALGONAC.

The saw mill at Walpole island is running at full blast, getting out a large quantity of ship timber for W. B. Morley, of Marine City.

Captain Motte and son are up here from Detroit on their way to the flats to commence sounding the canal for the spring dredging.

SAULT STE. MARIE.

Special to the Marine Record.

The following craft are wintering here: Propellers Ste. Marie, J. W. Steinhoff; tugs E. M. Peck, Mystic, Myra, John Hickler, Clara Hickler, Laura Hickler, John Upham, H. W. Seymour, Pioneer, Richard Endress, Bertha Endress; steamer M. S. Trempe, and ferry boats Antelope and Flora Holden. No particular changes have been made as to the masters, only Captain Thomas Stafford sails the palace steamer Ste. Marie. She is to run as usual on the route from the Sault to Cheboygan. The appointment is a good one Captain Stafford is well known on the lakes, a good sailor, and is sure to make the Ste. Marie a success.

Captain Ford Hursley will spare no means in fitting out the Flora Holden.

Captain Cal Bernier and J. R. Cook have started to make some extensive alterations in the Bertha Endress. They are now converting her from a tug into a full fledged ferry and excursion boat. The frames are all up for her cabin. They also intend to do general trafficking on the river.

Captain John Baptiste Mondor, late of the Ste. Marie, takes charge of the steamer Minnie M., of the Delta Transport line.

There will be a great many rafts pass through the Sault river the coming season.

The ice in the river now being cut for storage is only ten inches thick, while usually it is three feet thick at this time of the year.

Good judges predict an early opening of navigation compared to what it has been heretofore for several seasons past.

Mr. George Masters, engineer of the Ste. Marie, put in an appearance here last week. He has been in Cleveland spending the winter.

Captain John Spalding, superintendent of the canal, has been succeeded by Martin Lynch, to take effect March 1st. The captain will be missed on the canal, as he is well known on the lakes among the sailors. He has been there a number of years.

Boat owners expect a very busy season on the Sault river this year, and will make preparations to that effect.

The Marine Engineers' Association here is progressing finely, has a good many members and expects many more.

Captains of steambarges wanting good pilots for mates would do well to send here, as we have several who have run the Sault river regardless of buoys. Rafting in the Sault river causes many of the stakes to be moved out of position and that makes it bad for large craft with long tows. A pilot can be hired at reasonable figures, thereby the barges would save a good deal of lightering. The names of the pilots here are Captain Jos. Taylor, Captain Fred Trempe, Henry Johnson, Leo Bernard, Jos. Rouleau, Captain Dave Tallion, Theo. Trempe, Sam H. Ashmun. They are all good, trustworthy men.

J. G.

SARNIA.

The Beatty Line Co., are negotiating for the purchase of the steamer Michigan which has been running between Grand Haven and Milwaukee. She will take the place of the wrecked steamer Quebec.

The steamer Ontario, at Sarnia, is receiving a thorough overhauling.

PORT HURON.

The vessel agency of Wright & Eldridge has been dissolved.

The barge Yosemite is receiving new upper works at the yard of Dunford & Alverson.

The steambarge Oscoda has been taken out of the Dunford & Alverson dock nearly as good as the first day she was launched.

Captain Allen Fick, formerly of this city, has purchased a $5,000 interest in the steambarge Cumberland. He will command her this coming season.

Captain Wm. Forbes of this city, has let the contract to F. W. Wheeler, of Bay City, to build him a four masted schooner. Length of keel, 240 feet; beam 40 feet, depth of hold 17 feet.

BAY CITY.

Special to the Marine Record.

The steambarge Glasgow, one of the best crafts in the lumber trade, has been purchased from D. Whitney, jr., of Detroit, by Madden & Sharp of this city, to tow their barge, the A. W. Wright. The Glasgow was built at Trenton in 1872 and repaired in 1882. She rates B1. Captain Wm. Sharp will be manager. They have the barge Taylor and two other barges which will constitute her tow and she will trade to Buffalo.

Following are the officers of the Bay City and Cleveland Transportation company: President, Clark Haywood; secretary, treasurer and manager, Thos. S. Christie; directors, W. R. Stafford, M. J. Jenness, J. A. Francomb, Clark Haywood and Thos. S. Christie. These gentlemen are the owners of the new barge building at Wheeler's to take the place of the Christie.

The big vessel firm of Mitchell, Boutell & Co. have dissolved, Mr. Boutell retiring. Report says Mitchell & Co. retain the coal yard and the steambarge Folsom, and tug Music, Emerald and Cora B. and the barge Rosins and two others. Mr. Boutell will take the tug Annie Moiles, side wheel steamers Westover and Sea Gull and the rafting outfit.

Smith's tug line boats will not be given any extensive repairs this winter. They are all in good shape.

The steamer Pickup, bought by the man who was clerk of the Wellington R. Burt last season, will run as an excursion boat from the Saginaws to Sand Point.

The past week the weather was very fine during the day but much rain fell during the night. By Saturday most of the snow was gone and fears of a break up were manifest, but Saturday night and Sunday it snowed and blowed hard; the weather was not very cold and work around the yards is progressing favorably.

Captain Vance is putting the spars in the Mears this week and Wm. Sharp is putting some repairs on the A. W. Wright.

G.

DULUTH.

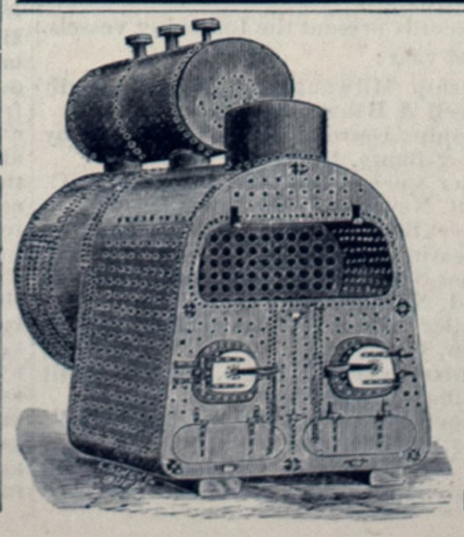
The News says that Cooley & LaVaque closed early in the week the sale of their dock property, 40 feet front, to A. Booth of Chicago, consideration $4,500. This sale does not include the tug Amethyst or any of the fishing outfit belonging to Cooley, LaVaque & Co.

The Herald has the following notes: A company with $100,000 capital is being organized to build drydocks and a shipyard here. Of the capital invested, $50,000 will be furnished by ship owners in Cleveland and builders in Maine, and the rest by parties here. The Cleveland parties have had numerous vessels in the Duluth trade for years and see the need of drydock facilities at some point on Lake Superior.

Captain Lloyds says he will put on an additional boat to the Hattie Lloyd for the Superior run this spring. He does not care to say yet just what craft it will be. He thinks he will also have purchased the Queen of the Lake by the opening of navigation and be in readiness to attend to excursion parties. Mariners expect an unusually early spring and the busiest lake season Duluth has ever known. Four years ago the harbor was open early in April and it is thought it will not remain closed longer than the middle of that month this year. The large fishing boat, the A. Booth, will start from Chicago for this port as soon as navigation is possible.

The extensive coal firm of Bell, Lewis & Yates, of Buffalo, have had a representative in Duluth lately, looking up the matter of building a coal dock, and opening business here on a large scale. This gentlemen, Mr. J. L. Lewis, has been making careful investigations, and examining property on both sides of the bay without as yet coming to any definite conclusion.

HOWARD H. BAKER & CO.,
Ship Chandlers and Sail Makers,
HAVE REMOVED TO THEIR NEW AND COMMODIOUS STORE,
18 & 20 Terrace,
Corner of Commercial and Pearl Streets,
BUFFALO, N. Y.



EAGLE BOILER WORKS,
M. RITER, Prop'r,
Cor. Indiana & Mary St.,
BUFFALO, N. Y.
MANUFACTURER OF
High and Low Pressure
Marine, Stationary, Portable, Locomotive and Upright Boilers; also, Salt Pans, Smoke Pipes and Heavy and Light Plate Iron Work of all Descriptions.
REPAIRS PROMPTLY ATTENDED TO.

HISTORY OF LAKE NAVIGATION.

BY J. W. HALL.

Written for the Marine Record.

CHAPTER LVII.

Lake business commenced at Detroit in 1859, March 10, the steamer Island Queen, Captain Orr, arriving at that port; at Port Colborne April 1, and at Buffalo April 7, the propeller Equinox the first to depart. The Straits of Mackinaw were clear April 4, the propeller Prairie State the first craft through, bound east. The first boat through the Sault canal was the steamer Lady Elgin, Captain Jack Wilson, May 3.

During the month of April, owing to a failure of the ice crop at various lower ports, notably Cleveland and Detroit, quite a number of steam and sail craft embarked in the trade to points on Lake Huron. The propeller Mineral Rock brought four hundred tons of ice from Frying Pan Island. This traffic was kept up until the middle of May.

There were owned at Detroit seventy-three side wheel steamers, aggregating 29,175 tons; thirty-two propellers, 6,090 tons; four barques, 1,337 tons; seven brigs, 1,877 tons; one hundred and thirty-one schooners, 19,671 tons; one hundred and thirty-six scows, 4,332 tons.

The largest steamer on the lakes was the Western World, 2,002 tons. There were nine others beside, over 1,000 tons each, twenty-one measuring over 400 tons, fifty-eight measuring over 200 tons, seventy measuring over 100 tons, sixty-three measuring over 20 tons, and sixty-one measuring under 20 tons.

There were at this period one thousand and six hundred vessels navigating the whole northwestern lakes with an aggregate of half a million tons.

The following table shows the rates of seamen's wages at different periods during the season, vessels in the lake shore trade usually paying the highest wages given:

April 1 to August 15, $12 to $14 per month.
August 15 to October 1, $16 per month.
October 1 to November 1, $18 to $20 per month.
November 1 to close of the season wages were from $1.00 to $1.50 per day.

The fall of 1859 was attended with more heavy gales than had been known for a number of years.

Passages of vessels by Detroit, bound up, steamers 194, propellers 492, barges 273, brigs 295, schooners 1,811; total, bound up, 3,065. Downward passages, steamers 195, propellers 503, barques 284, brigs 314, schooners 1,825; total 3,121; grand total, both ways, 6,186. Greatest number passing up in one day 85, down 73.

During the season there were shipped to Europe by lake vessels 692,057 West India staves, 142,662 standard pipe staves, and 474,693 feet of oak, walnut and pine lumber. This is exclusive of the cargoes shipped from Cleveland, Milan and Buffalo, those statements never having been exhibited.

The business through the Sault canal in 1859 far exceeded any former year. The number of vessels passing through during each month were as follows: May 123 vessels, aggregating 47,660 tons; June 184 vessels, 67,955 tons; July 220 vessels, 74,933 tons; August 193 vessels 64,752 tons; September 121 vessels, 49,560 tons.

The following steamers plied regularly in the trade:

Steamer North Star, 1,106 tons, Captain B. G. Sweet.
Steamer Illinois, 926 tons, Captain John Frazer.
Steamer Lady Elgin, 1,037 tons, Captain J. Wilson.
Propeller Montgomery, 879 tons, Captain J. Nicholson.
Propeller Northern Light, 716 tons, Captain J. Spalding.
Propeller Iron City, 934 tons, Captain J. E. Turner.
Propeller Mineral Rock, 560 tons, Captain R. S. Ryder.
Propeller Manhattan, 320 tons, Captain C. Ripley.

The latter steamer was unfortunately wrecked near the close of the season at Grand Marias, Lake Superior.

The propeller General Taylor, Captain J. G. Parker, made one trip to Marquette. The steamer Forester, Captain J. P. Ward, made one voyage late in the fall with supplies, and the propeller, Governor Cushman, one or more trips. Quite a number of sail vessels were employed in the iron ore trade.

The following pioneer lake men, well and prominently known, died in 1859:

Caplain C. H. Ludlow, suddenly, of heart disease, at Dunkirk, aged 59.
Captain John Disbrow, at Huron, O., aged 60.
Captain G. G. Hollywood, of dropsy, at St. Louis, Mo., aged 41.
Captain Armistead Lum, at Black River, O., aged 44.
Captain Paine Mann, at St. Joseph, Lake Michigan, aged 69.
Captain I. T. Pheatt, at Toledo, O., aged 66 years.
Captain Wm. Watts died on Lake Superior, and was buried at Cleveland, aged 45.

The various lake losses figure up as follows: Steamers wrecked or sunk, four, valuation, $2,900; steamers sunk four, $16,800; one by fire, $12,000; twenty damaged, $20,685; one jettisoned cargo, $3,500; three by collision, $800. Propellers, seven wrecked or sunk, $225,050; sixteen stranded, $13,760; one by fire, $100; twenty-four damaged, $12,540; three jettisoned cargo, $2,150; seven by collision, $41,250. Barques stranded, five, $6,740; fifteen damaged, $24,100; three by collision, $2,575. Brigs wrecked or sunk, six, $35,100; ten stranded, $15,900; nine damaged, $5,630; one jettisoned cargo, $700; six by collision, $25,700. Schooners wrecked or sunk eighteen, $64,688; seventy-eight stranded, $279,381; fire three, $3,550; damaged one hundred and twenty-one, $101,732; jettisoned cargo fifteen, $11,064; collison thirty-four, $63,005. Scows wrecked or sunk five, $8,250; stranded eleven, $18,450; damaged seven, $1,650; collision two $350; total, steam and sail craft, $1,020,100; number of disasters, 440.

The following craft passed out in 1859:

Steamer Asa R. Swift, exploded on St. Clair river, $3,000.

Steamer Minor, lost at Ontonagon, Lake Superior, $8,000.

Propeller Lady of the Lake, exploded and sunk in Lake Erie, with two lives, $40,000.

Propeller Manhattan, wrecked at Grand Marias, Lake Superior, $20,000.

Propeller Ohio, exploded and sunk off Erie and two lives lost, $90,000.

Propeller Milwaukee, sunk by schooner J. H. Tiffany in the Straits, $50,000.

Propeller Oriental, wrecked on Skillagalee, $90,000.

Propeller Troy, foundered off Point au Barque and twenty-three lives lost, $30,000.

Brig Portland, wrecked at Grand Haven, $4,000.

Brig Manchester, wrecked east of Cleveland, $5,000.

Brig Columbia, lost in Green Bay, $4,000.

Brig Buffalo, wrecked at Grand Haven, $8,000.

Brig Greyhound, lost near Sheboygan and one life lost, $30,000.

Brig Cumberland, wrecked at Milwaukee, $6,000.

Brig N. M. Standart, sunk by schooner Autocrat, Lake Michigan, $23,000.

Brig Missouri, wrecked at Kalamazoo, $4,000.

Schooner Big Z, lost near Sheboygan, Lake Michigan, $3,000.

Schooner Virginia Purdy, wrecked at Point au Pellee, $5,000.

Schooner Euphemia foundered in Lake Michigan and six lives lost, $3,000.

Schooner Bay City, wrecked on East Sister, $14,000.

Schooner Cleopatra, sunk by bark Adriatic, Lake Erie, $10,000.

Schooner General Houston, wrecked at Fairport, $3,000.

Schooner Forest, sunk by brig Acadia in Lake Erie and loss of one life, $4,000.

Schooner Dawn, sunk by propeller New York in Lake Erie, $12 000.

Schooner J. H. Tiffany, sunk by propeller Milwaukee in the Straits and five lives lost, $40,000.

Schooner Twilight, lost on Lake Ontario, $2,000.

Schooner California, lost at Port Clinton, Lake Erie, $1,000.

Schooner White Pigeon, lost on east shore of Lake Michigan, $2,000.

Schooner Sodus, wrecked near same place, $2,000.

Schooner Coaster, wrecked on Lake Superior, $5,000.

Schooner Island Queen, wrecked in the Straits, $20,000.

Schooner C. L. Burton, wrecked at Ashtabula, $5,000.

Schooner A. Scott, wrecked at Vermillion, $5,000.

Scow Antelope, lost at Point au Pellee, $2,000.

Scow William, wrecked at Fairport, $5,000.

Scow Stanley lost in Georgian Bay, $3,000.

Schooner Constitution, lost at Port Bruce, Lake Erie, $4,000.

Schooner Adda, lost at Lakeport, Lake Huron, $3,000.

Scow Sea Witch, wrecked at Fort Erie, C. W., $2,000.

Scow Geneva, lost at North Manitou, $1,500.

Schooner E. Creamer, wrecked at Chicago, $3,000.

Loss by steam vessel, $351,535; loss by sail vessels, $668,565; lives lost, 105; disasters, 440.

The backward state of lake business in 1859 limited the construction of vessels, and consequently but few were commissioned.

The records present the following vessels, built that year:

Steamship Milwaukee, 1,113 tons, built by Bidwell & Banta, Buffalo.

Steamship Detroit, 1,113 tons, built by Bidwell & Banta, Buffalo.

Steamer Cornet, 385 tons, built by R. C. Cronwell, Newport. as comet

Steamer Bonny Boat, 125 tons, built by J. W. Keating, Sandusky.

Steamer Seabird, 570 tons, built by R. C. Cronwell, Newport.

Propeller Akron, 367 tons, built by Quayle & Martin, Cleveland.

Propeller James E. Eagle, 194 tons, built by C. Hinman, Algonac.

Schooner Sunbury, 224 tons, built by F. N. Jones, Buffalo.

Bark W. S. Pierson, 386 tons, built by Fordham, Sandusky.

Propeller Michigan, 456 tons, built by R. Stead, Point Edward, for the Grand Trunk railway for ferry purposes.

Schooner S. A. Douglass, 360 tons, built by Ellenwood, Sackets Harbor.

Schooner Defiance, 141 tons, built by R. Munson, Port Hope, Ontario.

Schooner Dream, 80 tons, built by Lafrinier, Cleveland.

Schooner George Foote, 316 tons, built by A. McKay, Detroit.

Schooner Mediterranean, 297 tons, built by D. Rogers, Sodus, N. Y.

Tug A. S. Bemis, 49 tons, built by Crosthwaite, Buffalo.

Tug Seymour Belle, 51 tons, built by Norton & Leland, Cleveland.

Total tonnage, 5,225 tons; total valuation, $348,700.

A DOCKAGE SYSTEM FOR CHICAGO.

The time is fast approacing, if it has not already arrived, when a definite plan for furnishing the city of Chicago with docks and slips must be matured. This is a subject of vast importance to a great commercial city like ours, having so extensive a water front. But it presents no difficulties which can not be overcome and the whole system divested of all complications and intricacies, placed, as it should be, on such a tangible and solid basis as to not only afford entire relief for the enormous tonnage touching at this port, but also prove a source of large revenue to the city. We have been drifting along for many years without any definite plans for the accommodation of our vast shipping interest, and are only aroused now by the urgent necessities of the case.

Last year there were 10 744 arrivals at this port, representing a tonnage of 3,653,936 tons, and 10,798 clearances, representing a tonnage of 3,652.286 tons, the tonnage in both instances being somewhat smaller than for the previous year, which is no doubt accounted for to a great extent by the inconvenience experienced, the loss of time entailed, and the great expense attending the entrance and exit from our river. Indeed, it is a significant fact that the number of vessels arriving at, and departing from, this port during the past four years has been steadily declining. This is accounted for in part by the fact that the class of vessels employed in our lake navigation has materially changed within that time by the substitution of steam vessels of larger tonnage for the small sailing craft formerly employed; but this should not affect the aggregate of the tonnage carried, which has also shown a steady decline during the period named. The statistics show as follows:

Year.	ARRIVALS.		CLEARANCES.	
	Vessels.	Tonnage.	Vesse's.	Tonnage.
1882....	13,351	4,849.950	13 626	4.904,999
1883....	11.967	3.812.464	12.015	3.980,879
1884....	11.354	3.756.973	11 862	3.751,723
1885....	10 744	3 653.930	10 798	3,652.286

These figures are somewhat startling, and show the effects of the crowded condition of the river, with all the vexatious and inconveniences arising from the bridges, and tell too plainly that something must be done to relieve our overcrowded river.

With such an obstacle in the way of the transition of the produce of the vast area lying west of us it is folly to charge all our freight troubles upon the railways on account of discrimination against Chicago. The difficulty is a local one, and will continue to increase unless a remedy is applied, and the greatest danger is that the business once diverted will continue to flow in other channels, and in that way give Chicago the permanent go-by; and for this reason no time should be lost in dealing with a question which at this critical juncture would, in its relations to the commercial prosperity of the city, appear to be of paramount importance. There is no fear that Chicago will ever become a way station; but there certainty are good grounds of fear that she will lose much of the prestige gained in former days if her grain trade is to be ground out between the millstones of extortionate elevator charges and such totally inadequate facilities as are now offered her shipping.

The docks and slips to be constructed must, of course, be located north and south of Chicago River. The owners of property on Michigan avenue who, for the most part, comprise business men who have a direct interest in the growth and welfare of our city, have come to regard the construction of wharves in front of their property as an absolute necessity, and have therefore become reconciled to the whole project, accepting it as a foregone conclusion. The question, of course, depends largely upon the result of the proceedings now pending between the State of Illinois and the Illinois Central Railroad Company; the city of Chicago, although made a defendant in the suit, has unwisely abandoned all claim to the lake front and practically admitted all the allegations contained in the information filed by the attorney general. If these proceedings shall result in establishing the claims of the Illinois Central Railroad Company to the lake front under the act of 1869 they will doubtless proceed at once to construct docks from Randolph street to the pier now nearly completed at Thirteenth street. Such a result, although it would enrich a private corporation many millions of dollars and make the commerce of the city pay tribute to it forever, would be better than to permit the present state of things continue indefinitely. It would perhaps afford great relief to the shipping entering our port, and might be so restrained and regulated as to answer the same purpose as if the docks were built and owned by the city. The city would in any event have the same right as it now has under its charter, adopted April 23, 1875, to regulate and control the use of all public and private landing places, and to fix the rates of wharfage and dockage.

But should the proceedings referred to be decided adversely to the railroad company the title to the lake front would then revert to the state. If, then, assuming that the state would not care to undertake the work herself, an act could probably be obtained from the Legislature granting to the city of Chicago whatever right the state may hold in the submerged lands bordering on the lake within the limits of the city; the city could then either proceed to erect such necessary docks and slips as might be required, or it could as is done in some of the older Eastern cities, lease the privilege under proper restrictions to individuals or corporations, and in this way the entire purpose could be accomplished without adding to the debt of the city, while the ownership of the submerged lands would, under the grant of the state, rest in the city.

Up to 1871 the city of New York occupied about the same position in relation in its docks as the city of Chicago does to-day—that is, it had no established system looking to the control of its vast water front. A feeble attempt had been made the year before to control it by organizing, under act of legislature, a board for that purpose, but their powers were so limited that it did not meet the wants of the case, and on the 18th of April, 1871, the legislature passed an act under which the duties and authority of the "Department of Docks" was considerably enlarged. This board has, subject to the approval of the commissioners of the sinking fund, exclusive charge and control of all the wharf property belonging to the city, and all the land under water lying adjacent thereto, acquired under the act of the Legislature. They can lease to the highest bidder docks or water rights, or purchase or construct additional docks. The act also gave them control of all wharves, bulkheads, etc., owned by private individuals by the regulation of charges for their use. The board has also authority to acquire either by purchase or condemnation, for the benefit of the city, any wharf property belonging to private individuals; all proceedings being conducted by the corporation counsel. The commissioners of the land office, in whom formerly rested the title to the lands under water, have conveyed from time to time all the title of the state to the city of New York.

The comptroller, when requested by the commissioners of the sinking fund, prepares and issues bonds called "dock bonds of the city of New York," for the purpose of raising money necessary to carry out the provisions of the act. Not more than $3,000,000 of bonds can be issued in any one year, nor can the bonds be sold for less than par. The proceeds of bonds are deposited in the city treasury and are drawn out and paid by the comptroller under the requisition of the dock board, countersigned by the commissioners of the sinking fund, so that the interest of the city is fully protected. It has not been found necessary, however, to issue so large an amount in any past year. The entire expenditures for new wharves, bulkheads, and improvements, including also repairs to old wharves, dredging, and many incidental items, during the organization of the board for the past fifteen years (i. e., from 1871 to 1885, both years inclusive,) have been $10,830,196.56, while the accrued revenue of the department for the same time has been $11,552,433,13. The amount of money deposited last year alone to the credit of the commissioners for the sinking fund for rents of docks and slips was $1,187,280.62.

Space will not permit entering into further detail at this time, but the subject is one upon which such stupendous results depend that, in view of a possible early settlement of the legal cases now pending, it deserves the thoughtful attention of our people. Chicago needs the docks so badly that to hasten the result it might be wise, should the case in the lower court be decided in favor of the Illinois Central, to make a compromise with the great corporation that has been for years winding its sinuous form about this valuable property. The question must be settled, and the sooner it is done the better.—*Inter-Ocean.*

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The Port Arthur Sentinel says. Captain Foote, the popular commander of the steamer Athabasca, for last year, has been reappointed to that position for the coming season. His many friends here will be pleased to hear of this appointment and welcome him back again when the ship comes in.

It is said that Captain Louis Olsen will command the steambarge Markham the coming season.

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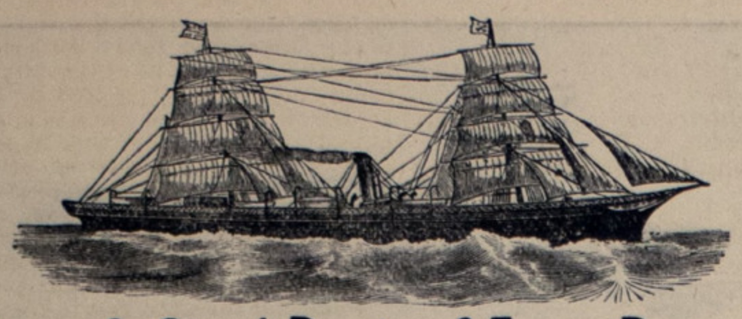

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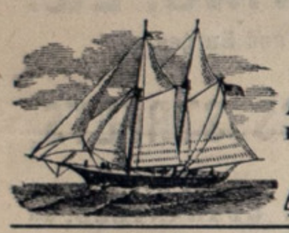

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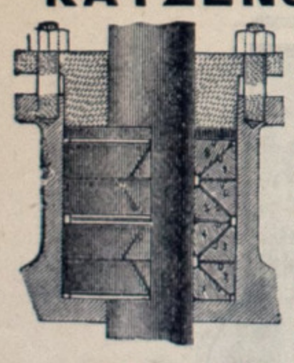

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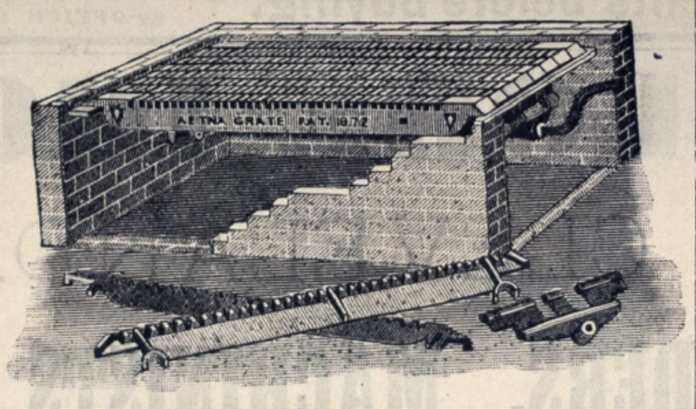

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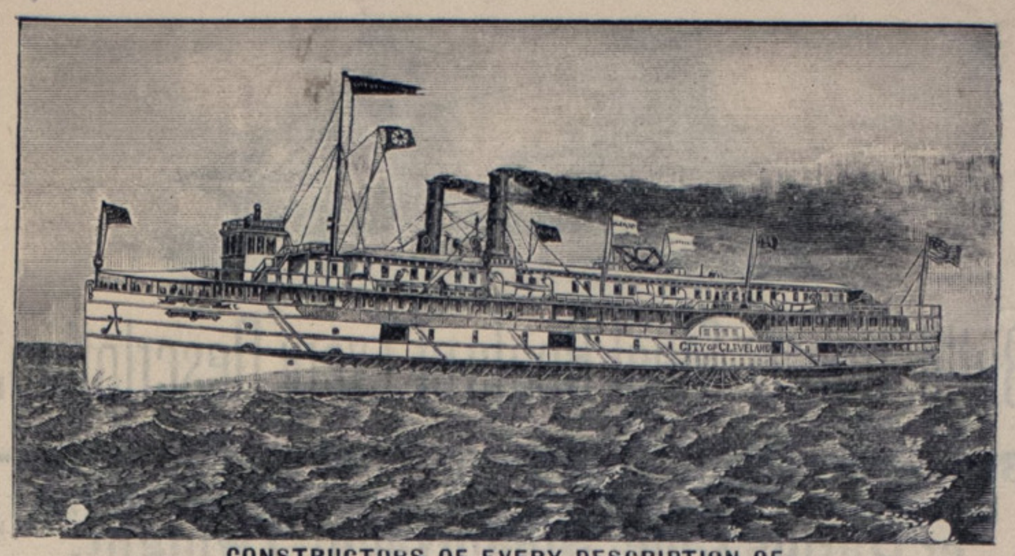

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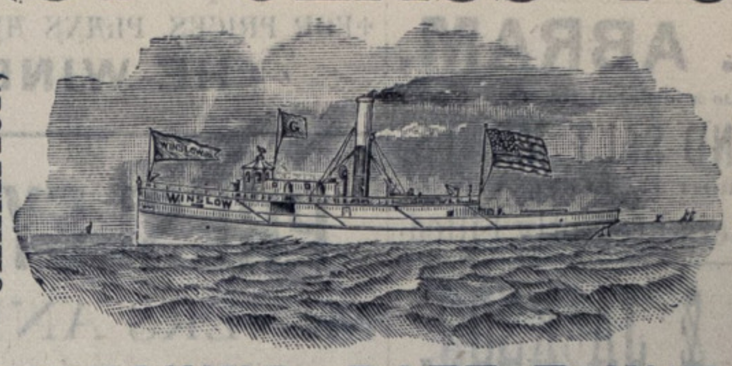

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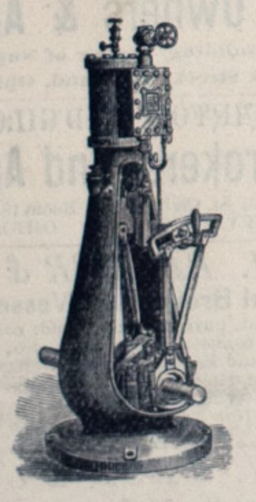

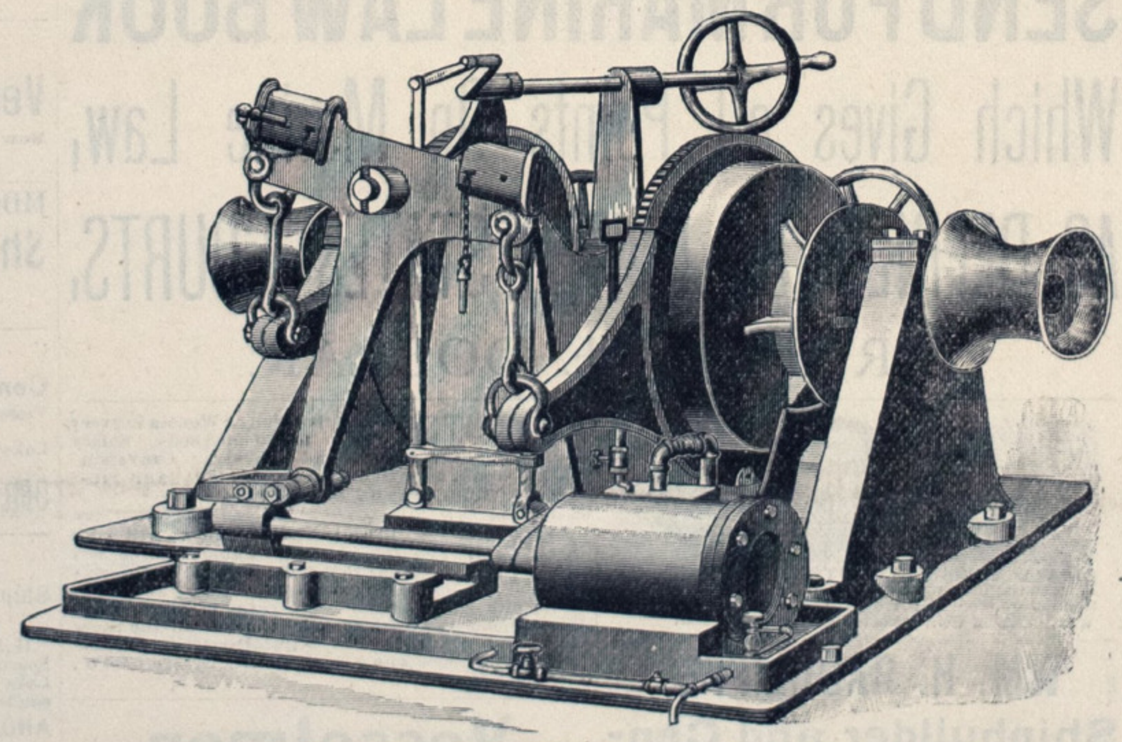

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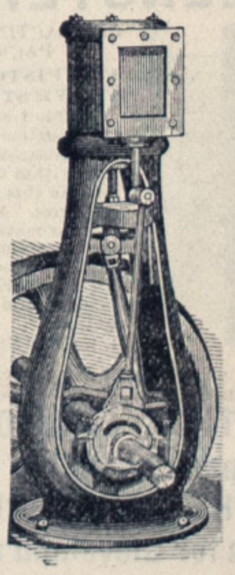

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